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The Goat as an Anti-Abortionist.

By F. T. Harvey, F.R.C.V.S., St. Columb.

For a very long period the goat has been regarded by certain people as possessing remarkable powers in controlling or greatly lessening the incidence of certain animal diseases, and that by merely mingling with the affected or susceptible.

On one occasion (1884) we saw a goat kept in a London cab stable as warding off glanders from the horse, and goats have always been kept with cows in some parts in the belief that they, in some way or other, exercise a favourable influence on abortion disease. In this part, if one sees a goat or two around the farmstead it may be taken as tolerably good evidence that abortion disease exists on the premises, or on a farm near by. Cornish people have in the past been regarded as notably superstitious, and one was inclined to regard the goat business as s mere whim, or a belief handed down from a remote past. It was, therefore, surprising to note, according to the *Lancet* (" Annotation " June 19th, 1926), that English farmers had found out a method of controlling contagious abortion by means of goats before bacteriology was thought of. According to the writer of the " Annotation," the organism, *Alcaligenes melitensis*, which causes Malta fever when it affects man, lives naturally in goats, and is antagonistic to *Alcaligenes abortus* (new nomenclature), or Bang's bacillus, as found infecting cows, and the goat by infecting the latter with *M. melitensis* renders them immune to Bang's organism. It is quite possible, or may be even probable, that the two diseases are antagonistic to one another, but Malta fever can have no possible connection with goats in this country under natural conditions, unless we suppose that English goats are natural carriers of a non-pathogenic strain of *M. melitensis* and which latter, on transmission to the cow, renders her immune to Bang's organism by a sort of vicarious vaccination.

The serum of a case of Malta fever will agglutinate both *Melitensis* and *Abortus* and certain cases of this type have occurred in man in this country, but more frequently in America, in which milk has come under suspicion. It appears that there is an increasing prevalence of human Malta fever in France, and a commission has been enquiring into the matter. According to this French commission, human Malta fever is largely confined to the departments in the South-east, and epizootic abortion in goats and sheep has almost the same geographical distribution, while epizootic abortion in cattle is prevalent throughout France, except in these same South-eastern departments. It appears probable that where there are many goats there are few cows, but the view is advanced that the two diseases are antagonistic. The milk of goats affected with melitensis is dangerous to man, but so far there does not appear to be any disease referable to the milk of goats in this country, so it is to be concluded that our goats are not carriers of melitensis. How, then, can British goats influence the incidence of abortion in our herds, or have they any influence at all ?

It is possible that Bang's bacillus by passage through goats may undergo some modification and thus become non-pathogenic to the cow, while still retaining the power of growing or living in her tissues, and at the same time controlling the growth of more virulent strains. The question is one capable of solution by experiment.

Regarding the goat in this light, as an anti-abortionist, seems very much like an example of Calmette's *premonition vaccination* in tuberculosis. Calmette, as quoted by the late Dr. J. G. Adami ("Advance in Medicine," *Lancet*, May 29th, 1926), carried the *Bacillus tuberculosis* through 230 cultures in thirteen years, and found it then harmless for all domestic animals. This attenuated Bacillus B.C.G. or Bacillus Calmette-Guerin, is now being used for vaccination of both calves and new-born infants. In ordinary vaccination it is presumed that the inoculated bacteria are rapidly destroyed, while in *premonition vaccination* the inoculated bacteria continue to live in the tissues, but do not cause disease, or set up active lesions, and while the modified bacteria are living in the system the bearer is immune against reinfection with the disease. One might here mention that during an outbreak of contagious abortion amongst some dairy cows, the latter were continuously pastured in a park containing a herd of deer, but during a period of two years no case of abortion occurred amongst the latter, so far as could be observed.

The Treatment of Human Anthrax.

In the *Semana Medica* of Buenos Aires, of January 28th, 1926, F. Destefano and R. F. Vaccarezza report on 414 cases of anthrax in the human subject treated with anti-anthrax serum, normal serum, and injections of peptone. Their conclusions are as follows :

1. Injections of peptone have given better results than those obtained with anti-anthrax serum or with normal bovine serum.

2. The total mortality has been 10·93 per cent. for 192 cases treated exclusively with peptone ; 15·85 per cent. for 82 cases treated conclusively with anti-anthrax serum ; and 29·41 per cent. for the seven cases treated exclusively with normal bovine serum.

3. If we discard those cases where death occurred in 24 hours after treatment was started (fulminating cases), the percentage of deaths descends to 9.04 for the peptone, 10·38 per cent. for the anti-anthrax serum, and 25 per cent. for normal bovine serum.

Tuberculosis and its Control.*

By W. A. N. Robertson, D.V.Sc., Chief Veterinary Officer, Victoria.

Probably more has been written about tuberculosis than about any other disease to which man or animal is subject. It has formed the basis of innumerable conferences and Royal commissions, and therefore, with some degree of trepidation, I have selected it for this address. My excuse for so doing is that the subject is one of national importance and, as our methods of control have not advanced to any appreciable extent for many years, we have a tendency to regard it very much as we do the poor—always with us. It is, therefore, wise to focus attention on the subject and, so to speak, to "take stock." I do not claim to put before you any fresh knowledge, but trust I shall be able to direct your thoughts into certain channels and bring before you the immensity of the task of eradication.

Comparatively only a few years ago there were two schools of thought on the disease—that which considered that bovine tuberculosis was communicable to man, and that which denied it. Whilst opinions were so diverse, it was difficult to approach the subject of control with any hope of success, but it may be safely said that this difficulty has disappeared and to-day there is only one school, for the disease has been conclusively proved to be communicable, and the subject can, therefore, be approached in a united manner. It is this knowledge of communicability which makes the subject of control of paramount importance to all.

Were it merely a question of controlling an animal disease the task would be most difficult, for the insidious manner in which the disease manifests itself and the absence of any spectacular symptoms would cause stock owners to resent any attempt at eradication, especially in a country like Australia, where cattle on the average are not of sufficient value to make the individual loss so pronounced as to be felt. Since, however, bovine tuberculosis is communicable to man, the stock owner recognises his responsibility and is prepared to do his share when the ever-popular demand that "something should be done" becomes more than a parrot-like expression and it is recognised that the public must do its share and contribute towards the cost. The question of eradication is not a problem for the stock owner only. Greater attention must be paid to it by the public generally, and the dangers of the disease, the loss to the Commonwealth, and difficulties of the problem, brought home to them in such a manner as to ensure their co-operation with the project.

The loss from tuberculosis may be considered under two headings—loss to human beings by death or incapacitation, and loss to the live stock industry. The loss of human life and depreciation of human effort cannot be even estimated, but, from the limited number of cases examined bacteriologically in different parts of the world, we know that the loss is a real one and should be combated. In this direction, however, the general public are not sufficiently educated, but it should not be difficult to stimulate in their minds a desire for eradication of the disease. The loss to the live stock industry is also one for which no actual figures can be given, but if only 0·25 per cent. of deaths occur, or if we include abattoir and other condemnations as about 1 per cent., then from 35,000 to 140,000 head of stock are lost annually. Many of these are pure bred. This loss is becoming more and more one which must be taken into account. As closer settlement develops and land values and working costs increase and as education proceeds for a better class of stock, especially dairy cows, so the problem becomes more deserving of attention. For success under our more modern methods of living, every avenue of production must be operated on a scale of greater efficiency. The loss from tuberculosis is a steady drain—it is a pity it is so steady. If it were more spectacular, like anthrax, the mind of the breeder would be stimulated and more efficient control possible. Tuberculosis, which causes a much greater loss, is not regarded by the man on the land as anything like so serious. Some stimulus is necessary to awaken a public feeling. This can come only from an educational campaign designed, not to create a scare, but a solid desire to remove the loss. Governments, even if alive to the danger and loss and desirous of taking action towards elimination, could do nothing or very little against the ignorance of breeders and stock owners. The strongest factor towards eradication must come from the stock owner and the public, and when they awaken to the loss to the herds and danger to human life, then the demand for greater efforts will result in those efforts being forthcoming, and Governments will be forced to find the wherewithal to fight the scourge.

Education may be taken as the key-stone to the success with which the fight against tuberculosis has progressed in the United States of America. There it is not a question of eradication because it is the law, or in other words trying to force the procedure, but because the desire of breeders to have their herds cleaned is so great that there is a big waiting list. Two systems are in operation: The Accredited Herd Plan and the Circumscribed Area Plan. The success achieved can be shown by contrasting the position in 1914 with that in 1924. In the former year, under the first system, 134,143 head of cattle were tested and 204 herds were fully accredited free from tuberculosis, while 883 were in process of becoming accredited. In 1924, 5,312,364 head were tested and 48,273 herds were fully accredited, while 529,018 were in process, having passed one test, while a total of over 7,000,000 head were under supervision. At the end of the year there were herds comprising over 3,000,000 head of cattle on the waiting list. Last year over 7,000,000 head were tested. At the same time eradication is going on in circumscribed areas, and at the end of 1924, 122 counties had tested all

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cattle, and 196 were testing. Under this system a further three and a half million cattle were dealt with. By education this great work has been possible, without it all the powers of the Government would have been useless. Now, by its own weight, the campaign must proceed; indeed, it would be almost impossible to stop it.

The British Royal Commission of 1898 reported that:

All precautions against the communication of tuberculosis disease to human beings by the consumption of meat or milk of diseased animals must be regarded as temporary and uncertain palliatives as long as no systematic attempt is made to reduce the prevalence of the disease among the animals themselves.

America has answered this and shown what systematic effort can do. It must, however, be pointed out that the cost is enormous and none but a country as wealthy as America could hope to carry on, for cost is the controlling factor.

Australia is a country larger than the United States of America, with two and half million head of dairy cows and a total of fourteen million cattle, many of them scattered over vast areas. We, therefore, cannot hope to attain such heights as the United States of America for many years. Apart from the actual cost of testing, the economic loss from the slaughter of reactors, which at an estimate of 5 per cent. would be 60,000 head, would be too great a load for a young country to carry. I recognise that this loss would not fall suddenly, for years would be necessary to carry the work to completion, but, whilst there is no incentive to the stock owner and dairyman, particularly, to rid his herds of tuberculosis, there is little hope of getting his full co-operation in any eradication campaign with such loss to be faced. While the dairyman is unable to obtain a higher price for non-tuberculous milk or for non-tuberculous stock one cannot expect any great anxiety on his part to clean his herd. The incentive must be given by an enlightened public opinion and demand for the milk of herds free from tuberculosis. Following this will come the desire for pedigree herds to be accredited and the ball will be set in motion and gradually gather momentum.

For the Tenth International Veterinary Congress in London McFadyean wrote a paper on tuberculosis in which he says:—

"It is now generally admitted that, as a rule, the milk of cows which can only be recognised as infected with tuberculosis by means of the tuberculin test does not contain tubercle bacilli. The danger attaching to such cows is potential rather than actual, and it lies in the fact that the disease may soon advance until the mammary tissue is involved."

He further states:

"If the milk supply . . . could be derived exclusively from cows which appear to be healthy when submitted to an ordinary clinical examination, the risk of infection of the inhabitants with bovine tubercle bacilli would be, if not absolutely abolished, at least reduced to negligible quantities."

If these statements are to be taken as correct, then there will be little hope of stimulating public opinion along lines of eradication, for an examination of all cows supplying milk can be easily undertaken. It would, I consider, result in a false sense of security being established. If the statements could be supported by a further one that no tubercle bacilli were given off from the udder until lesions had become detectable, the task would be easy, but I venture to say no such statement can be made. Examination is certainly of great value in reducing the danger and in eliminating the most dangerous cases, as has been shown in Victoria where, under the *Dairy Supervision Act*, all udders are examined. In that State it is found that pigs reared on farms in dairy supervision areas show 4 per cent. tuberculosis, while pigs from non-supervision areas show 15 per cent. This may be taken as an indication that the removal of cases of detectable udder tuberculosis has reduced the danger from tubercle bacilli in milk.

After a long experience in the examination of udders and in observing the work of veterinary officers in the Department, I would say that only in those cases in which tuberculous lesions are near the surface of the gland or are of some standing, with well-developed degenerating areas, can the disease be detected. Early cases are not detectable by "ordinary clinical examination."

At the next meeting of this Association it should be possible to give a more accurate answer to this aspect of the problem, for we have embarked on a scheme to ascertain the number of tubercle bacilli in the metropolitan milk supply and 2,000 samples of farm milk will be submitted to examination at the milk laboratory at the Melbourne University Veterinary School. The test is to comprise guinea pig inoculation.

It is recognised that there is another channel by which milk may become the carrier of tubercle bacilli, and that is through fæces from tuberculous animals gaining access to it. This I regard as almost negligible. Jordan and Arms found 26·66 per cent. of fæces from known reactors to contain tubercle bacilli and as the amount of fæces entering milk is not large, the number of the bacilli passed in this way is not dangerous.

Turning once more to the question of eradication from the stock owners' point of view, there are certain points worthy of consideration. The factor above all others which I think militates against hearty co-operation in eradication is that tuberculin does not discriminate between degrees of infection. It is disheartening to the owner of pedigree stock or even a dairyman with a selected grade herd to find on *post-mortem* examination that probably one of his best cows has a lesion so small that it is only discovered after a very diligent search, or it may even be that microscopical examination is necessary. The fact that perhaps the next cow killed is badly affected does not remove the thought that one cow at least was doing no harm in his herd. The loss rankles, and I

think we will all agree that her slaughter was unwarranted.

This gives rise, in passing, to the question of the reliability of the test, which again gives rise to doubts in the minds of the stock owners. We recognise that there is probably no more reliable test for any disease, but it is not 100 per cent. efficient, and to kill reacting cows and then not to find lesions is disconcerting to say the least, but an even more disconcerting experience occurred recently when, in a herd tested annually for tuberculosis and accredited free, a number of cows were killed for chronic pleuro-pneumonia and several were found with lesions of tuberculosis. In this connection, I think, there is room for investigation as to dosage of tuberculin.

In Victoria we are using a double test, the ophthalmic and the subcutaneous, with satisfactory results. Condemnation is made if either method gives a reaction and we have found that the number reacting to the ophthalmic test and not to the subcutaneous test exceeds the number reacting to the subcutaneous test and not to the ophthalmic test.

Let us now turn to a consideration of methods capable of adoption for control and eradication :

(1) Testing the whole herd with tuberculin and, as a result, either the slaughter of reactors or the isolation of reactors. The first alternative is not economically sound. We have, of course, the example of the United States of America, but, in a comparatively young country like Australia, it is open to question whether such a method should be carried out, especially when it is borne in mind that so many reactors are affected only in a slight degree, and further the cost of testing alone would be a heavy tax. The isolation of reactors and their economic use is preferable, but for success it would be almost necessary for special farms to be provided. Good cows could be bred from on the Bang system, and inferior ones topped off and slaughtered under supervision. If, however, the Bang system is used on the owner's farm, he is handicapped by not having an accredited herd. This difficulty might be overcome by providing for accredited A and B herds until such time as the reactors were eliminated. The system, however, requires almost a double farm. This will always be a factor against success.

(2) The application of the tuberculin test to young stock only and their separation from the main herd. This system has much to commend it. While it is open to the objection of the double farm, yet I believe that, with a campaign of eradication, a large number of breeders in ignorance of the health of the main herd could be induced to undertake it and eventually, by death or removal of the old cows, to build up an accredited herd.

(3) Production of immunity. A considerable amount of work has been done in various parts of the world along lines with this object in view. If and when it is achieved, the way will be open for eradication at a minimum of expense. Probably the greatest work on these lines has been performed by Calmette and there is promise of excellent results. Calmette has found that by the growth of tubercle bacilli on media saturated with bile, the bacilli acquire special physiological characters, and after successive replantings a calf will tolerate one hundred milligrammes, while three milligrammes of the same strain of bacilli grown on ordinary media produce fatal miliary tuberculosis in twenty-eight to thirty-five days. The effect of the injection is to cause general fever without producing the slightest tuberculous formation. Calves which receive two doses one month apart and are submitted one month later to an intravenous injection of virulent bacilli have shown no trace of reaction even eighteen months later. Calmette says :

Tuberculous infection is so very wide spread, and so serious in certain groups, that it is almost impossible to visualise its control to begin with, with its extinction later, except by vaccination of all susceptible human beings and animals. This vaccination can be accomplished, inasmuch as it occurs spontaneously in an immense number of individuals, in consequence of one or more mild infections contracted, most often, in early life.

It would certainly be dangerous to induce such infections artificially by the use of virulent tubercle bacilli. But we have seen that it is possible to modify certain of their properties in such a way that the bacilli lose their faculty of producing the cellular changes characteristic of tubercles. To continue the research along this path is the rôle of the investigator.

How any one of these methods can be put to practical use depends, however, upon education. None of them will be of any use unless there is an enlightened public opinion behind it, and I believe that the first steps toward this end can and should be taken by the veterinary profession. Each member, from a national point of view and not from a sordid one of obtaining a few cows to test, should talk about tuberculosis to all and sundry, lecture on the disease whenever possible and awaken a national conscience to the necessity for eradication. Care is necessary or the idea may become prevalent that his propaganda is carried out merely with a view to increase the work of the veterinary surgeon. Only a national view can lead to success. But whether the veterinary profession takes the lead or not, the keynote to success is an education campaign.

A Notable Birthday.

All his professional brethren will unite in congratulating Mr. Philip Deighton, M.R.C.V.S., Selby, an ex-President of the Yorkshire Division, who has been in practice for over sixty years, and is believed to be the oldest veterinary surgeon in the country, in the celebration of his 79th birthday, which took place on September 24th.

Mr. Deighton is the son of an East Riding yeoman. For over fifty years he has been the hon. veterinary surgeon of the Bubwith Agricultural Show.

Pododermatitis Circumscripta.*

By Captain SHERMAN R. INGRAM.

The term pododermatitis circumscripta is used in connection with veterinary science to designate a pathological change in the sensitive and later the non-sensitive structures of the soles of the feet of hoofed animals (Ungulata), but for the purpose of this article only the horse and mule will be considered. Corns are the result of pressure on the sensitive sole and usually occur in the posterior region between the bar and wall, but may occur in any part of the sole. Constant pressure, even though not severe, interferes with the circulation and nutrition of the structures involved. Corns are seldom found in the feet of mules or in the hind feet of horses, but are frequently found in the fore feet of horses and usually in the heel.

Classification and Pathology.—Corns may be considered in the order of their severity as dry, moist and suppurating. The dry corn is one in which the pressure was sufficiently severe to cause an extravasation of blood from the vessels involved which shows up as an ecchymosis or a discoloration of the horn tissue and is unattended with inflammatory changes.

The moist corn is one in which inflammatory exudate is present and is a marked symptom indicating a recent injury which was quite severe in character, and may be marked by a brownish, yellowish, or reddish discoloration of the horn tissue. It is usually quite painful, due to the swollen sensitive structures within the non-yielding hoof and frequently causes severe lameness.

The suppurating corn is the result of an old and severe injury in which the inflammatory condition is accompanied by bacterial infection indicated by the presence of pus.

Causes.—The causes of corns may be considered under two headings, namely, predisposing and exciting.

Predisposing Causes.—Under this heading we can consider injuries where excessive constant pressure occurs, particularly in animals with faulty conformation of the feet and legs. In wide, flat feet, the horny structures are much thinner than in the normal foot and the sole falls nearer the same plane as the weight bearing surface of the bars and wall, which renders the sensitive sole more liable to concussion from stones, rough roads, etc., and also the space between the wall and the bars of the wide, flat foot is greater than in the normal foot, and thus a greater area is exposed to injury. In a long, narrow foot, the horn structure is usually much thicker than in the normal foot, and as a result there is not the normal amount of contraction and expansion necessary for proper circulation and nutrition.

Unequal growth of horn on either the outer or inner wall will cause a more or less constant pressure on the sensitive tissues through the unequal distribution of the body weight on the foot.

Low heels favour the production of corns, due to the excessive weight thrown on the posterior part of the foot.

The thin, narrow chest may be a predisposing cause of corns, as the fore legs of such a horse are inclined to curve inwardly, causing the outer wall of the foot to become longer than the inner, and here corns are commonly found in the outer heel. The pigeon-toe and extreme sloping pastern may also be contributing factors in corns through the resultant unequal distribution of weight.

Predisposing causes of corns other than faulty conformation should also be considered. Sidebones, due to the loss of resiliency and elasticity of the diseased lateral cartilage, produce a constant pressure on the sensitive tissue between the cartilage and the wall of the foot and often result in corns.

Dropped soles, hard, brittle horn, and contracted heels are predisposing causes of corns through their interference with the normal expansion and contraction of the foot.

Exciting Causes.—Faulty preparation of the foot, and faulty shoeing are the two predominating exciting causes of corns. Excessive thinning of the sole renders that organ liable to concussion either from the shoe or from stones, rough roads, etc. Lack of frog pressure results in undue concussion of the foot by throwing all the weight on the wall and bars. Unequal levelling of the foot, excessive thinning of the toe, and lowering of the centre of the wall causes an unequal distribution of the weight and results in injury to those parts receiving the greatest stress. Paring of the bar not only destroys its function as a weight-supporting organ, but also exposes this region to injury from gravel, etc.

Improper fitting and the improper application of the shoe are prime factors in the causation of corns. Shoes with high heels or calks destroy the counter-pressure of the frog with the ground, and result in bruising and pinching of the sensitive tissues. The concave shoe is conducive of corns as the toe and heels are required to support the body weight. The use of this shoe may also result in a bruised toe. Shoes with heels of unequal length are a direct cause of corns, particularly in the heel which is supported by the longer branch of the shoe, as this heel is forced to receive an undue amount of concussion. Shoes with narrow heels may bruise the sole of the region subject to corns and result in severe lameness.

No doubt the most common cause of corns is to permit the shoe to remain on the foot for too long a time, in which case the shoe becomes loose and the foot grows out over it, causing sole pressure. The concussion is greater with a loose shoe than it is with one properly secured. Gravel and dirt accumulate between the shoe and the sole and cause bruises of the sensitive structures. Thinning of the shoe by long wear will result in excessive pressure on the heels and interfere with the circulation and nutrition of that part of the foot. A shoe too closely seated from the fourth nail hole backward should be considered as productive of corns.

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Corns may result from stones becoming firmly wedged between either the inner or outer branch of the shoe and the bar or frog.

We should not lose sight of the fact that the kind of work the animal is put to is also responsible to some extent for the causation of corns. Corns are common in the feet of horses that are worked constantly on paved streets, hard, rocky roads, etc., while they seldom occur in horses that are worked on farms in soft ground and are allowed to go barefooted.

Symptoms.—In the simple dry corn the pain and disturbance are so slight that they may not be noticed until the sole is pared preparatory to shoeing, or the foot is being examined for other causes and the discoloration of the tissues then discovered.

In more severe cases, the animal when standing exhibits symptoms of pain by pointing the affected foot with the fetlock joint slightly flexed and the heel off the ground. When both fore feet are affected the symptoms are alternated. In cases of very severe bruising and more especially in the suppurating corn, the hoof in the region affected is unduly warm to the touch, and when pressure is applied over the area the animal flinches. Symptoms of lameness will be more pronounced when the horse is on hard ground than when on soft ground. The symptoms are those of a supporting leg lameness. Before a negative opinion is rendered as to the existence of corns the superficial layers of the horny sole should be removed with the knife.

Other diseases and injuries of the lower extremities that may be confused with corns are mild acute laminitis, podotrochelitis and sesamoiditis, injuries, slight strain of the distal ends of the flexor tendons, slight strain of the suspensory ligament, and slight sprain of the fetlock joint in the absence of swelling.

Prognosis.—Favourable results may be expected in the case of dry and moist corns with careful surgery and removal of the cause. The prognosis is also favourable with suppurating corns, providing careful surgery and proper treatment are instituted. However, we can expect a return of the condition when it is the result of faulty conformation as it is here difficult, if not impossible, to remove the cause.

Treatment.—The first thing to be taken into consideration in the treatment of corns is the removal of the cause and when this is done many mild cases will recover without further interference. Moist corns and the more progressive cases of dry corns will require the careful surgical removal of a portion of the sole and wall adjacent to the seat of injury, beginning about the middle of the outer and inner quarters and extending back to the heels, gradually removing more of the horny structures as we near the heels. A sufficient amount of sole should be removed to render it flexible under pressure of the thumb. If the hoof is dry and hard, soaking the feet and the application of petrolatum is indicated. If the animal is allowed to go barefooted several weeks after the operation, natural frog pressure is established, and in the opinion of the writer is more desirable than is the bar shoe. The constant pressure from the bar shoe, if allowed to remain on for too long a time, has a tendency to destroy the frog and cause portions of it to become detached and ragged.

In cases of suppurating corns, first remove the cause if possible. We are not always absolutely sure of the presence of pus until an exploratory operation has been made, and for that reason it is always advisable to proceed with the operation as stated above, and in addition remove all detached horn and establish drainage, after which irrigate the affected area with an antiseptic solution. For this purpose potassium permanganate is very good, using a 1 per cent. solution. Pack the affected foot daily and keep the pack moist with the solution. Under favourable conditions the affected area takes on a dry appearance about the third day after the operation, thus indicating the arrest of the action of the pus-producing bacteria, and it is then advisable to change from a moist to a dry pack, which should be continued until such time as the affected area is covered over with a thin layer of horn. If the service of the animal is not required, better results can be obtained by letting it go barefooted. The animal may, however, be placed in service by applying a smooth, light shoe and keeping the foot packed with tar and oakum. This pack should be removed about the tenth day, as it may cause the superficial layers of the horny sole to become soft and mealy.

(NOTE): Statistics in the Surgeon General's Office show that during 1923 a total of 199 horses was admitted to sick report on account of pododermatitis circumscripta, or an annual rate of 7·18. During 1924 there were 203 admissions or a rate of 7·87, and during 1925, 296 admissions or a rate of 10·94. There were 4 deaths from this cause in 1924 and 5 deaths in 1925, but none in 1923. These figures indicate the importance of this condition in the United States Army.

The Basis of Heredity.

CHROMOSOMES AND CHARACTERS.

(Reprinted from *The Times*).

In normal production the new individual begins with the entrance part of a cell derived from the male parent into the egg-cell derived from the female. We are most familiar with the process of reproduction in which two individuals are concerned belonging to different sexes, and when the union of the cells was identified as the conclusive event in the union of the sexes, this was spoken of as fertilisation. The natural assumption was that the entrance of a spermatozoon into an egg was the necessary preliminary to the development of a new individual, the mode by which a male rendered a female fertile.

But the conjugation of male and female cells, although normal, is not a necessary preliminary to reproduction. In bees, to take a well-known example, the queen lays eggs which if fertilised grow into other queens or into the arrested females known as workers, according to the nutrition given the grub. But she also lays eggs which without fertilisation develop into drones. This kind of reproduction in which only one sex is concerned is known as parthenogenesis or maiden fertility. It has arisen independently in many different animals and plants, and should be enough to make it clear that the primary object of the union of sexual cells cannot be fertilisation. If more proof is required, it can be got from Loeb's discovery of artificial parthenogenesis. Eggs of many different kinds of creatures can be started on the path of growing into new

individuals if the entrance of male cells is replaced by various kinds of chemical and physical stimulation.

The Hereditary Material.

What, then, is the primary function of the union of the germ cells to which the secondary functions, occasionally replaced by other agents, of stimulating the growth of a new individual is usually attached? Without doubt it is the provision of a mechanism by which the material bearers of the hereditary qualities of each parent are brought together to determine the new individual. The nucleus of a cell contains a number of bodies, called chromosomes, identified as containing a special kind of protoplasm from their reaction to certain chemical stains and recognised as of high importance because of their behaviour when cells unite or increase by division. The number of chromosomes in the nucleus of each cell differs from species to species, but with one exception is the same for all the cells of all the tissues of the body of every animal and plant. The exception is the nucleus of the egg-cell when it is ripe for fertilisation and of the male cell when it is ready to fertilise the egg. These each contain half the number of chromosomes normal to the species. The process usually known as fertilisation is the restoration to an egg-cell of the number of chromosomes normal to the species, half of these thus being derived from the female parent and half brought in from the male. This very striking event has been observed in so many different kinds of animals and plants that it may be accepted as an established biological fact. In some cases even the chromosomes derived from the two sexes differ in shape or size so markedly that they can be traced in all the cells of the new individual. Fertilisation is usually accomplished by the act of union of the sexual cells, but its real purpose is to secure a universal distribution of material derived from each parent in all the tissues of the body.

Chromosomes and Mendelian Factors.

The Mendelian analysis of heredity, pursued by actual experiment in cross-breeding, and entirely independent of theory or observation of the physical basis of heredity, has shown that the characters of an indivual occur in paired elements in the germinal material, and that these pairs separate out when the germ cells are getting ready for conjugation, so that each germ cell contains one or other element of each pair. It has shown, moreover, that within limits, the elements of pairs representing different characters are marshalled and assorted independently—that is to say, that if one pair represent tallness and shortness, and another smooth and wrinkled, the tall is not necessarily bound up with the smooth or with the wrinkled, and so on. The limits have been ascertained in many cases, also experimentally, and have been given the name "linkage groups," bundles of characters which usually, although not invariably, are tied together so as to behave as single units. The most familiar cases of these are characters which are linked with sex.

These results of experimental breeding have not been based in any way on the study of the microscopic processes in the nucleus of cells. They have been obtained for the most part by persons skilled in the nurture and breeding of plants and animals, with aptitudes and technical methods very different from those of the laboratory microscopist. It is therefore more significant that there should be so close a coincidence between the observed processes of nuclear change and the mechanism that might be imagined to explain the Mendelian results. The number of linkage groups has been studied with great accuracy in a little fruit-fly, which can be bred quickly and in which a very large number of pairs of characters has been observed. The linked groups are four in number, and there are four pairs of chromosomes. In the sweet pea there are seven pairs of chromosomes, and seven linked groups of characters have been worked out. In other cases there is at least a probability of identity in the numbers. If these are mere coincidences they are very striking.

On the other hand, it seems almost impossible to doubt that the paired nature of the chromosomes and their behaviour in ripening of the germ cells and conjugation are mere accidental mimics of what would be required if the Mendelian principles of heredity have a visible material basis. As yet, there is no real clue as to how the chromosomes act in determining the characters of the growing individual, but it is almost beyond the possibility of dispute that they are the mechanism by which characters are transmitted.

A Local Authority's Clean Milk Campaign.

A report recently issued by the Public Health Department of the Bingley Urban District Council is an example of the valuable assistance that can be given by Sanitary Authorities towards the general improvement in cleanliness of the milk supply by education and co-operation. The scheme was initiated by the Senior Sanitary Inspector as a result of his attendance at the Clean Milk Course for Sanitary Inspectors held at Leeds University in July, 1925.

The Bingley Urban District area extends to 11,675 acres, and the population is 19,380. There are 110 farmers engaged in milk production, and they have 1,578 cows housed in 209 cowsheds.

The report is written under three main headings: (1) visits to farms and educational work amongst producers, (2) bacteriological examination of milk samples, and (3) educational work amongst the consumers; and a brief summary of its contents may be outlined.

Visits to Farms and Educational Work among Producers.—A list of milk producers in the area was prepared and arrangements made for one of the Sanitary Inspectors' staff to take samples of milk from each farm. The sampling was commenced on October 6, 1925. Samples were taken by the Inspector during afternoon milking, sealed in sterile bottles, stored in a cool room over night, and dispatched to Leeds University for bacteriological examination the next day. In some cases there was a difficulty owing to inaccessibility of the farm, or time of milking, and then instructions were given to the farmer as to the method of sampling. Each farmer was notified of the result of his own sample only, and was then visited by the Inspector, together with a member of the Leeds University staff, to explain the significance of the report he had received, and to point out avenues of improvement. The farm buildings varied considerably, and many cowsheds were old, narrow, badly lit and ventilated, and difficult to keep clean. Care was taken, however, not to suggest improvements involving heavy expenditure, and stress was laid on the cleanliness of cows and cowsheds, personal cleanliness of the milkers, and the care of utensils.

Difficulties were experienced at the outset, the farmers being somewhat suspicious of the supervision; but with the scheme thoroughly explained, this attitude was changed to one of enthusiasm, and on many farms distinct improvements in methods and equipment were shown. Regular grooming of cows and daily washing of cowshed floors was practised by many farmers, who also evinced interest in the use of covered milk pails and the erection of home-made sterilisers. The campaign was further advanced by a series of three lectures on clean milk production, each of which was illustrated with lantern slides and followed by discussions. There was a good attendance at these meetings, and a lecture on the handling of milk was likewise well attended.

Examination of Milk.—Samples of milk were taken from fifteen to twenty-five farmers on two days of the same week, and were submitted the following morning for examination; these samples constituted a group, and five of such groups were arranged. These were called "primary samples." Later in the campaign a "repeat" sample was taken from each farmer and grouped in the same manner. The results of the "repeat" samples showed that a considerable improvement had been made; *e.g.*, one group had an average bacterial count of 2,000,000 for the "primary" samples and only 52,500 for the "repeat." The improve-

ment in regard to *bacillus coli* and keeping properties was similarly marked, as shown in the following statement dealing with the averages for the two rounds :—

	All primary samples	All repeat samples
Average bacterial count per c.c.	1,044,328	147,947
Average presence of *bacillus coli*	1/1000th c.c.	1/100th c.c.
Average keeping quality ...	37 hours	70 hours

The percentage of " primary " samples reaching Grade " A " standard was 24·8, and this was increased to 59·6 per cent. in the case of the repeat samples ; these results indicate that whilst milk with a low bacterial count and good keeping quality can only be produced when the cows are clean, the utensils sterilised, and the milk cooled, milk of a very high standard can be produced on commercial lines, even by farmers who have comparatively poor buildings. An important note in the report is that it is necessary to arouse the interest of milkers, as without their co-operation no real progress can be made.

Educational Work among Consumers.—The campaign was concluded with a " Clean Milk Week " from February 20 to 26, 1926. During this week a large number of lectures, mostly illustrated by lantern slides, was given to the inhabitants of the district. The National Milk Publicity Council gave very willing assistance in the way of lecturers and the loan of slides and films, and over 2,500 persons manifested considerable interest. Leaflets on " How Milk should be Cared For in the Home " were sent to practically every home in the district, and 300 posters were exhibited.

As a result of the campaign it is evident that sympathetic co-operation with the milk trade is amply justified. Many farmers who commenced daily grooming of their cows said they were amply repaid by the improved health of their animals. One farmer has applied for a Grade " A " licence, and others have expressed their intention to do so provided the public demand increases sufficiently. The general public showed considerable interest in the campaign, and the report states that there is an increasing demand for graded milks, with the result that two local dealers have already licences to sell Grade " A."

The matter has not been left here, however. To eliminate any lapse of interest on the part of producers, the Public Health Committee have arranged with the University to continue examining samples. Individual results will be supplied as previously and will be followed by personal visits by the Inspector for discussion.—*The Journal of the Ministry of Agriculture.*

Gastronomic Incidents at the Zoo.

One of the most recent of the interesting " Zoo " articles which appear at intervals in *The Times* contained the following :—

" A few snakes eat other snakes as their regular diet. The best known examples are the hamadryad and the king cobra, which almost invariably refuse any food except other snakes. The hamadryad is particular ; it has been tempted with eels and offered adders, but has shown no interest in them. As a rule, however, reptiles, if graded according to size, do not interfere with each other. The adders and grass snakes in the outdoor viper pit live in harmony, and are often to be seen lying together in twined masses. Some wall-lizards, for which there was no suitable accommodation, were recently put in one of the large and sunny python's dens. They were to be seen sitting in the sun in rows on the python's back, quite happy and in no way offending the python. But accidents happen sometimes. Two pythons, which had occupied the same cage for years, recently made a simultaneous attack on the same dead rabbit, when the larger and heavier serpent attacked and constricted its companion before a rescue could be made. A river snake and an alligator had been living in peace for some time when they quarrelled over a frog ; the snake deserted the frog and had swallowed the alligator, all but the tip of the tail, when the incident was noticed, and the alligator was pulled out, disturbed, but uninjured.

" The matamata terrapin opened its capacious mouth the other afternoon and sucked in a rare young crocodile. Fortunately, in this case also, the incident attracted attention in time, and the crocodile was rescued. But sometimes the result is not so happy. A desert iguana was recently eaten by a smaller monitor, which, after some time, disgorged it. The iguana was badly bitten and showed no signs of life. It was accordingly placed in the ice-chest until next day, when, in the usual course, the pathologist took it out for *post-mortem* examination. To everyone's surprise, the iguana began to move. It was at once taken to the sick ward of the Reptile House, where it was given a bath and artificial sunlight treatment. It revived in a few hours, began to drink, and looked like recovering. It died next day, however, and was then found to have been vitally wounded by its attacker's teeth. Recently, also, a young alligator swallowed a caiman and disgorged it in a half-digested state some hours afterwards, when it was disturbed during the search for its missing companion. Another unexpected occurrence was that in which a young bull frog caught and devoured four spiky anolis lizards. It was unable to find complete room for them and was detected because the tails of four lizards were seen sticking out of its mouth."

The Work of the Moredun Institute.

Mr. W. A. Pool, M.R.C.V.S., director of the Animal Diseases Research Association, made a statement at the recently-held annual meeting of the Scottish Branch of the National Medical Veterinary Association, at Perth, on the work of the new Institute for the investigation of animal diseases at Moredun, Liberton, Edinburgh. Their staff, he explained, consisted of only three, and they had a good many problems in front of them. They were committed to some problems of animal disease which would be undoubtedly lengthy, and sheep diseases had up to now been the main line of their work. If they could get a bigger staff together they hoped to be able to add to the scope of their activities, but with the present staff they were more or less limited to the work already in hand. They had recently been given £1,000 for the purpose of a motor laboratory, and he believed that would be a great help to them, as it would enable them to carry out investigations on the spot at the right time.

They were investigating the causes of sheep diseases—scrapie, lamb dysentery, louping-ill, and, to a certain extent, braxy. As far as he could see, these problems were going to keep them busy for a year or two, or possibly more. In the case of scrapie, it meant undoubtedly a very long investigation. In the case of lamb dysentery, so far as the results went, they could not claim that they had produced any method of controlling the disease as yet, but there was no knowing what the next year or two might bring about. They had been interested in abortion, but they had not had time to make that one of their large lines of investigation, although they had been issuing the live vaccine on a moderate scale, and as far as he could make out the results seemed to be quite good. They had done a little work in connection with mammitis, but there was a great deal more to be done on the pathology of the disease. Grass disease was, of course, one of the items which had always been a big item in their programme. He did not think they had any grounds for forming any concrete opinion as to the cause of the disease. Mr. Pool expressed the hope that members of the Scottish Branch would pay a visit to the Institute and give them helpful advice.

Professor Mitchell, of the Royal (Dick) Veterinary College, Edinburgh, in moving a vote of thanks to Mr. Pool, said that there was not the slightest doubt that the staff of three at the Institute would before long be greatly augmented, because the problems were many, and the work was more than three men could possibly do.—*The Scotsman.*

The Veterinary Record.

9th October, 1926.

THE PRICE OF SERVICE.

We publish below, in the simplest possible form, the rates of pay and retiring gratuities fixed by Army Order No. 196, of the 29th June last, relatively for the Royal Army Medical Corps, the Army Dental Corps and the Royal Army Veterinary Corps :—

R.A.M.C.			A.D.C.			R.A.V.C.		
	£ s. d.			£ s. d.			£ s. d.	
Lieut. ...	1 2 0		Lieut. ...	1 0 0		Lieut. ...	1 0 0	
Capt. ...	1 7 0	(in 3½ yrs.)	Capt. ...	1 5 0		Capt. ...	1 5 0	(in 3½ yrs.)
Major ...	1 17 6	(in 12 yrs.)	Major ...	1 13 0	(in 12 yrs.)	Major ...	1 11 0	(in 12 yrs.)
Lt.-Col.	2 17 6		Lt.-Col.	2 15 0		Lt.-Col.	2 9 0	
Col. ...	3 10 0		Col. ...	3 7 6		Col. ...	2 15 0	
Retiring Gratuity :—			*Retiring Gratuity* :—			*Retiring Gratuity* :—		
At 7 yrs.	£1,000		At 7 yrs.	—		At 7 yrs.	£800	A new measure.
,, 15 yrs.	£2,800	(instead of £1,800)	,, 15 yrs.	£2,000	(instead of £1,800)	,, 15 yrs.	£1,800	
,, 18 yrs.	£3,500	(instead of £2,500)	,, 18 yrs.	£3,000	(instead of £2,500)	,, 18 yrs.	£2,500	

We do not profess to know how the value of the services of professional officers of the army in their various grades and ranks is arrived at, but it would appear to us, and we feel sure it will be endorsed by the ordinary observer, that there are certain aspects of these relative emoluments which are not quite logical, bearing in mind the fact that, to all intents and purposes, periods of service in the respective ranks are now practically the same. For instance, the medical officer (R.A.M.C.) is a two shillings per day better man for the first twelve years of his service than either the dentist (A.D.C.) or the veterinary officer (R.A.V.C.), yet he is a clear £1,000 better than the latter at 15 years and 18 years service. Also, the dentist and the veterinary officer are considered of equal standing in pay as lieutenants and captains up to twelve years service, but the dentist is a two shillings per day better man as a major, a better lieut.-colonel by six shillings per day, and a twelve shillings and sixpence per day better full colonel. On the other hand, the dentist lieut.-colonel or colonel is only two shillings and sixpence per day inferior to the lieut.-colonel or colonel R.A.M.C.

The new scales of "retiring gratuities" are even more curious, and seem to have been arranged on a stepping-stone basis, the new gratuities of veterinary service leaping into the old niche of the medical and dental services from a position that was most unsatisfactory, while the two latter services have been advanced to new and higher positions, the medical most substantially so.

It is difficult to reconcile these anomalies, for such they are without question. We regret to criticise, but in the interests of veterinary service, we feel in duty bound to bring these matters to public notice. After all, the profession of medicine, whether it is human or comparative, is all one, training is more or less on the same lines, and in the army, where all are officers on an equal footing, there is no justification for the variances of pay and gratuities which the recent Army Order discloses.

H.M. Stationery Office Publications.

The undermentioned have been published during the week. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses :— London : Adastral House, Kingsway, W.C.2, and 28 Abingdon Street, S.W.1 ; Cardiff : 1 St. Andrew's Crescent ; Manchester : York Street ; Edinburgh : 120 George Street.

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War Office :—		
Research Department, Woolwich :—		
R.D. Report. No. 68. Portable X-ray Equipment, 1926	1 6	1 7

CLINICAL AND CASE REPORTS.

An Atypical Case of Anthrax.

By G. D. W. Davidson, M.R.C.V.S., Castle Douglas.

One of my clients has a large dairy farm (of ninety milking cows) on which, for several years, there have been odd cases of anthrax. These have been ascribed to the dressing of the land with bone manures.

On the 8th of September a cow died in the byre and was certified by Mr. Waddell, County Veterinary Inspector, as having died from anthrax. I was sent for, as another cow had given practically no milk.

The dairyman said: "This is how they all go. They go off their milk at one milking and are dead by the next."

While I was examining the cow, Mr. Waddell arrived to view the one that had died that morning.

The cow appeared practically normal, but for a slight roaring noise in the throat. There were no visible accompanying swellings. Her temperature was 103·4°F., and the pulse was slightly accelerated.

I went back in the afternoon between 3 and 4 p.m., and again met Mr. Waddell, who was superintending the disinfecting of the byres. Mr. Waddell accompanied me on my examination of the cow. On taking her temperature, I was surprised to find it had fallen to 102·4°F. After consulting with Mr. Waddell, I decided to let the cow out.

When the cows came in for milking the next morning this cow was missing and, on search being made at daylight, she was found dead, and was later certified as a case of anthrax. All the cases on this farm have been confirmed by the Ministry of Agriculture.

I should like to ask if any reader has had a similar experience as regards temperatures, as I have always been taught, and have understood, that anthrax cases had always very high temperatures.

How easily such a case could find its way to a knackery had it been under treatment for some other disease, and had anthrax not been thought of!

On referring to Hutyra and Marek, I see that they state that sometimes the temperature is normal in cattle.

Inventration of Skin in the Cat.

By Henry Gray, M.R.C.V.S.

Cats, in falling out of a window on to the prominence of railings, not infrequently drive a good deal of their elastic skin through the ventral rent into the abdominal cavity, where it remains until the nature of the injury is realised, and the skin is drawn out of its unnatural position. In some cases the skin has been retained in the abdomen until a kind of indentation cyst, filled with shed hair, is formed. A practitioner who for the first time encounters such a case is at his wit's end to diagnose the nature of this peculiar condition. The treatment is simple: pulling out the skin and removing the loose hair. The animal's dietary should then be limited to milk until the abdominal rent has closed. Should the viscera escape, they should be pushed back into the abdominal cavity. In cases where the skin is torn, the ventral rent and the skin wound should be closed with silk sutures, and a bandage applied to keep the skin in contact with the underlying tissues, so as to prevent sagging and a receptacle for the accumulation of serous fluid. In such cases the edges of the wound usually unite by first intention.

The Treatment of Fibrous Anchylosis and Fibrous Thickening by Fibro-lysin.

By D. E. Wilkinson, Class C., R.V.C., Camden Town.

Some thirty years ago a veterinary surgeon, for whom I had acted as "locum," gave me several volumes of *The Veterinarian*. Reading through them, I found an article by Colonel Joshua Nunn, A.V.D., on the treatment of fibrous anchylosis by taxis under general anæsthesia. As a friend of mine had recently lost a valuable hunter mare from this trouble, following a severe sprain of the fetlock caused by stepping in a hole whilst at grass, the subject interested me and I resolved to give the treatment a trial at the first opportunity.

This was a long time in coming, but in 1901 I had under treatment a pony which (whilst at grass) was severely kicked on the point of the shoulder by a big cart horse. He was intensely lame and remained so after the resultant swelling and local pain had subsided. The shoulder was blistered and a seton inserted, but the lameness still persisted and, as I could detect no fracture, I came to the conclusion that fibrous anchylosis was the cause of the trouble. The animal stood only on its "toe," and could with difficulty be made to walk at all. As muscular atrophy was becoming marked, it was imperative to adopt some other treatment quickly.

I cast the pony and administered chloroform. Putting on a pair of rubber-soled boots to avoid bruising the skin, I attached a strong casting rope to the foot, lay on my back on the straw bed and, pushing with both feet against the anterior aspect of the animal's shoulder, repeatedly jerked the foot forward. After doing this for a few minutes the joint seemed to relax considerably, and I then removed the chloroform muzzle and instructed the groom to swing the limb to and fro until consciousness returned.

The result exceeded my most sanguine expectations. The pony walked sound as soon as it got up, and, after a fortnight's walking exercise to restore tone to the wasted muscles, returned to work.

This was, however, a case of anchylosis following a fairly recent injury, and although the success of the treatment made me enthusiastic about it, I had comparative failures in several subsequent cases.

This I attributed to the density of the fibrous deposit, and in an effort to soften it I decided to try the effect of injections of fibro-lysin.

Fibro-lysin is a solution of thiosinamin, a derivative of mustard, and has the property of softening scar tissue.

The two following cases may be quoted as illustrative of its usefulness in horse practice.

The late Brig.-Gen. Niel Haig (then Major Haig) had a very high-class weight-carrying pony which had twice been fired for sprain of the fetlock joint. As it got steadily worse, Mr. Alfred Smart, a client of mine and friend of the owner, suggested I should see it.

I found the pony intensely lame in the near fore-fetlock, which was partly luxated, resting on its flat foot, but only able to move with great difficulty. The whole of the fetlock joint was clothed in a dense fibrous sheath and was almost immobile. Atrophy of the muscles of the arm and shoulder was very marked. There was no indication of ring-bone, nor were the tendons contracted.

I had the pony brought in by ambulance and with some considerable difficulty forced a hypodermic needle into the dense fibres clothing the fetlock, at several places around the joint. This was then thoroughly massaged with soap liniment to diffuse the injections, the pony cast and chloroformed, and the adhesions broken down by traction as in the case above described. A distinct cracking or "rending" was noticeable when traction was first applied. The joint was then freely flexed and extended, the pony allowed to rise, and a cotton-wool pressure bandage firmly applied.

Next morning the animal was able to walk out very fairly, although he stumbled a good deal. The whole limb was well massaged, and walking exercise for ten minutes three times a day prescribed.

Signs of stiffness showed themselves again in a few days, so the treatment was repeated: anæsthesia taxis and injection of fibro-lysin as before.

This was done, in all, six times, the pony shod in a thick-toed shoe to obtain leverage and carefully ridden at a walk by a light man. The stumbling gradually eased as the volume and tone of the muscles returned. At my suggestion, the pony was ridden as covert-hack all the winter and the following summer, and for several seasons after he played regimental polo, carrying his owner, a very heavy man.

The next case upon which I used this solution was a cab-horse with chronic contraction of both flexor tendons of the off hind leg. She was a useful animal but of small market value, and her owner had been warned by the police against working her lame. There was no local pain or inflammation and no sign of spavin, but the tendons were much thickened and calloused and the mare stood on her toe with the fetlock partly luxated.

By means of a long hypodermic needle passed right through the perforatus tendon into the perforans, an injection of 2½ c.c. of fibro-lysin was administered. The needle was then partially withdrawn and the remainder of a 5 c.c. ampoule injected into the perforatus. The leg was then well rubbed with soap liniment and a pressure bandage applied. A thick-toed shoe was put on the foot and the animal exercised twice daily. A marked improvement had taken place in ten days' time, when the treatment was repeated.

(*Continued at foot of next column.*)

(*Continued from previous column.*)

A month's rest from work, with daily walking exercise, followed. At the end of this time the mare returned to work sound.

I have quite a number of successful cases following this treatment in chronic thickening of the tendons following a breakdown. The resultant elasticity of the tendons seems to prevent a recurrence of the strain.

REVIEW.

Hutyra and Marek Up-to-date.

Delving among *Veterinary Record* leading articles written at the commencement of this decade one read: "The number of works that have become available to the student of veterinary medicine during the last twenty years has greatly lessened his labours, is gradually making lectures obsolete and teaching by demonstration more than ever to be desired." In this triple process, works of reference designed primarily to occupy positions of prominence upon the bookshelves of practitioners play a large part, for the student of to-day is no longer content to restrict his library to text-books, stipulated or otherwise. As the state of his—or his parents'—pocket dictates, he will invariably endeavour, as soon as he achieves the dignity of membership of Class C, to furnish himself with the most comprehensive and imposing volume, or set of volumes, obtainable on the subjects of Veterinary Pathology and Therapeutics.

Amongst these, as men whose experience of College is comparatively recent will agree, pride of place was universally accorded the English translation of Hutyra and Marek's *Special Pathology and Therapeutics of the Diseases of Domesticated Animals* and it was, therefore, something of a tragedy when, a little over two years ago, the second edition of this work ran out of print. On many other, and more important, grounds, however, the appearance of the Third Authorised American Edition, translated from the Sixth Revised and Enlarged German Edition, is an event as welcome as it is noteworthy. The edition selected by the Editors reflects in a superlative degree the ability and thoroughness with which the authors have interwoven with their own observations a critical review and discussion of the opinions of other leaders of veterinary scientific opinion and study. Since the publication of the Second English Edition nearly ten years ago, two new German editions have appeared, but the Editors—John R. Mohler, Chief of the United States Bureau of Animal Industry, and Adolph Eichorn, Director of the Veterinary Department, Lederle Antitoxin Laboratory, selected the sixth edition as being the most thoroughly revised.

Providentially, the ravages of war left unscathed those who alone could preserve continuity in the process of bringing up-to-date this vast compendium of vital information—vital because capable of extension and qualification in the light of the results of the immense amount of supplementary research carried

on since the resumption of such work became practicable. During the period of the World War the authors—Dr. Franz Hutyra, Professor of Infectious Diseases, and Dr. Josef Marek, Professor of Special Pathology and Therapy, both of the Royal Veterinary College at Budapest—were unable to extract from the various books and scientific periodicals published in those years the information requisite for the task of amplifying and amending their great work.

The present edition bears evidence, in every section, of the assiduity with which they set about their task as soon as opportunity afforded. So many were the changes and, in particular, the important additions necessitated, that it was deemed advisable to publish the work in three volumes instead of two, as previously. Thus, in this edition, the first volume is limited to the infectious diseases, the second deals with diseases of the digestive, circulatory and respiratory organs, and the third with diseases of the urinary organs, blood and blood-producing organs, the spleen, metabolism, the nervous system, the organs of locomotion and the skin.

Considerable addition has been made to the number of illustrations, which were already a noteworthy feature of the earlier editions, and their attractiveness and value are enhanced by the extensive employment of colour processes, but with a discretion in their application which makes for clarity and not for crudity and confusion, as is sometimes the case.

Hutyra has made himself responsible for the first volume, and he has included in it a new chapter on paratyphoid, which he states to be "the first attempt to amplify and collectively present our still meagre knowledge of the diseases belonging to this group, a further study of which will no doubt afford a clearer insight into some of the obscure pathological processes." In another new feature, a chapter on Texas Fever, the author has differentiated the affection more distinctly than hitherto from the European piroplasmosis, basing this on etiological differences and the different modes of prevention and eradication, while recent investigations into malignant œdema in man and animals have led him to revise the etiology of this disease. As with black-quarter, however, the proviso is made that present conceptions of this affection may be subject to further modifications. Recent work upon ulcerative and epizootic lymphangitis and upon infectious abortion of bovines and mares necessitated a very thorough revision of the chapters devoted to these diseases. Amongst other diseases dealt with in this volume research work upon which, in the laboratory and in the field, has rendered necessary an extensive revision of previous chapters, may be mentioned the avian septicæmias, joint-ill of foals, foot-and-mouth disease (treatment with blood) and, with special reference to diagnostic methods, pleuropneumonia, glanders and dourine.

The second and third volumes, prepared by Marek, deal with the organic diseases. Here we find included for the first time an interesting account of acetonæmia of cattle, the peculiar disease termed by Janssen "chronic gastro-intestinal catarrh of cows before calving." One mentions this as indicative of the descriptions now given of a number of conditions the study of which may well lead to the elucidation of more important related problems. Among other new features, one dealing with a condition of increasing interest to veterinarians in this country may be mentioned, intestinal coccidiosis of swine, while the chapter upon the sequelæ of foot-and-mouth disease may, of course, yet prove of more than academic interest to them.

An innovation in the third volume is the appearance of a chapter devoted to the study of exhaustion, which, hitherto regarded as at most a serious and common factor in many a syndrome, is here accorded the dignity of a disease *per se*. The treatment of this subject, which is extensive, will well repay the careful attention which should be bestowed upon a condition experience of which is universal. Louping-ill of sheep now finds a place which seems almost belated to-day, while the chapters on scabies and on many of the diseases placed in that slowly-diminishing class, "Affections of doubtful etiology" (which are not dealt with as "a class apart" in this work) have been re-written. It is a matter for surprise, however, that more is not recorded of the results of recent study of the diseases of the dog and cat.

Space has been found for a number of newly-introduced tables. They are extremely lucid and will add greatly to the knowledge of the practitioner, while fulfilling their primary duty as tables of reference for many groups of research workers.

The numerous translators, among whom one notes with interest and gratification the names of Mr. Gladstone Mayall and Dr. A. Leslie Sheather, have accomplished their arduous task with distinction, for the literary merit of the publication is high. To the publishers, Messrs. Baillière, Tindall and Cox, congratulations are due for having produced the volumes in a style befitting the importance of a work which will rank amongst the outstanding veterinary publications of the time.

At the outset reference was made to the delight with which the re-publication of this great work, enlarged and amended in every respect material to one which would retain the appellation "standard," will be greeted by the student. It may safely be assumed that no books on these allied subjects figure more generally on the shelves of practitioners than do the earlier editions, but many who possess these will be anxious to utilise the second-hand market and then recapture their pride of possession in the latest Hutyra and Marek. This work will make, however, an even wider appeal, for it has a claim, unrivalled by any other dealing with veterinary pathology and therapeutics, upon the serious attention of the devotee of the study of comparative medicine from the human aspect.

HUTYRA, Franz, Professor of Infectious Diseases, Royal Veterinary College, Budapest; and Josef MAREK, M.D., Professor of Special Pathology and Therapy, Royal Veterinary College, Budapest.

(*Continued at foot of first column next page.*)

REPORT.

Bovine Infectious Abortion.*

(Report of Committee, U.S. Live Stock Sanitary Association, December, 1925.)

Each year since 1917 your committee on abortion has presented its report. As stated in the original motion made and passed by this association at its twentieth annual meeting, it is the function of this committee "to draw up a compilation of all established facts concerning abortion disease and they shall recommend measures which have been found most effective in combating the disease under certain conditions." A study of the reports presented for the past eight years shows that the first mandate has been carried out. The recommendations as to the control of the disease have been very meagre. Your committee in 1918 made a definite recommendation that "bovine infectious abortion is a dangerous communicable disease of cattle, due to a specific germ, *B. abortus* (Bang), and that hereafter it shall be considered as such and as coming within the meaning of the laws or regulations of the States having general or special laws or regulations covering the handling of contagious diseases of live stock, and that in other States, laws or regulations should be forthwith adopted to bring the disease under official cognizance." After a prolonged and heated discussion the association voted to refer this report back to the committee for further consideration. Each committee since has made certain recommendations, largely, however, relating to the educational policy in respect to the disease, and little has been presented as to control.

The past seven years have been productive of many additional facts in respect to our knowledge of bovine infectious abortion. Additional germs have been described which cause abortion, as mucors and Vibrio fœtus, but none has been shown to be a widespread and common causative factor. Experiments in the field of nutrition have demonstrated that deficient rations in certain species of animals may cause difficult conception and in some cases actually produce abortion. Researches have not shown that nutritional disturbances are important factors in the production of abortion among cattle. Investigators have shown that the disease due to *Bact. abortus* (Bang) is widespread and causes enormous economic losses. The problem before this association is not how veterinary practitioners shall treat cases of sterility or diseases of young calves, and as a regulatory body we are not primarily concerned with these conditions, brought about in cattle by the pyogenic group of bacteria. What we are so vitally interested in is *Bact. abortus* (Bang) and the animals which have this organism in their bodies. It is the belief of your committee, after a careful study of the papers on abortion presented before this association for the past eight years, and the following discussions, that the importance of the Bang organism as a disease producer has not been sufficiently taken into account by the sanitary officers of many of our States. Your committee this year wishes to emphasise once more the importance of *Bact. abortus* (Bang) as the cause of one of the most serious diseases affecting the cattle industry of the United States. Those live stock sanitary officials who persist in ignoring this organism as a cause of disease, and fail to institute measures tending toward the control of animals infected with and eliminating this organism from their bodies, are not doing their full duty. This attitude will react unfavourably on the cattle breeding industry of the whole country in future years.

Immediately we hear "Why don't you formulate a plan for the control of this infection and present it to us for consideration?" Please do not be too hasty in your judgment. Let us see if such a procedure is feasible.

Bovine tuberculosis has been present in this country for many years. After the discovery of tuberculin and its effectiveness as a diagnostic agent in the early nineties, various States took up the problem of the control of this disease. Conditions in the different commonwealths varied greatly, and no two States worked under exactly the same plan. Some States made a great deal more progress than others. It was not until 1917, more than twenty years later, that the accredited herd plan for the control of bovine tuberculosis was adopted by this organisation. Since this later date many changes have been injected into the original scheme, and other plans, notably the "area plan," have been initiated. All the States have fallen into line and are now proceeding with the control of bovine tuberculosis in a nearly uniform manner. This, however, has been brought about after 30 years of individual effort on the part of each State and, further, has been made possible only after a tremendous educational campaign by all interested parties. Education of the people to the importance of control measures is the basis of success in combating any contagious disease. Education must precede regulation.

England has pursued the policy of letting bovine tuberculosis largely look after itself. What has been the result? According to statements published in the British Isles, it is estimated that approximately fifty per cent. of the cattle of that area will react to the tuberculin test. Just lately an Order has gone into effect which will aid in the suppression of the

(*Continued from previous page.*)

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W. B.

*From Proceedings of the Twenty-ninth Annual Meeting of the U.S. Live Stock Sanitary Association, held at Chicago, December 2-4, 1925. Reprinted from Chicago *Veterinary Medicine*.

disease in that country. The principal part of the Act relates to the disposal of "wasters" or physical cases of tuberculosis and to cases of tuberculosis of the udder. No general application of the tuberculin test is provided. In other words, the plan in operation in this country for the control of bovine tuberculosis is not deemed suitable for conditions in Great Britain. We cite these facts in regard to tuberculosis to illustrate our stand that (1) it is not yet feasible to put into effect a general plan to control bovine infectious abortion, and (2) to illustrate what happens when a country or state makes little effort to control an infectious disease. It is time that every State, here or elsewhere represented, should consider the ravages of bovine infectious abortion and institute some control measures, taking into account the known facts concerning the disease, and such measures should be applicable to the conditions of the cattle industry in the respective commonwealth. Your committee stands ready and willing to offer advice and to aid in any way possible any live stock sanitary official who desires help in formulating measures for the control of the malady. It should be kept in mind that when the committee on abortion was established, they were charged with "recommending measures which have been found most effective in combating the disease under certain conditions."

Some States have already made a start. Georgia, South Carolina and most recently Arkansas, have regulations r quiring a health certificate for all animals imported into their domains. Pennsylvania has a plan for the control of bovine infectious abortion. A few other States have some form of regulation. In most of these latter cases the regulations are overlooked or not enforced. The great majority of States do not have any plan for the control of this disease.

The time has come, we believe, when a concentrated effort should be made in all the States of this Union to reduce the losses resulting from bovine infectious abortion. It is absolutely not feasible to attempt at the present time to adopt a uniform plan for the control of this infection. We believe that some time in the future it will be possible to formulate and place in effect a uniform method for the control of this disease, but at the present time each State should work out its own system, which is most adaptable to its particular conditions. The point we wish to emphasise most is, that now we should take some official cognizance of bovine infectious abortion, and further that this should be done by educational or control measures which are really active and not merely so many meaningless words or phrases, which are as dead as the paper upon which they are written.

This year, throughout this country, there will be spent in excess of $12,000,000 for the control of bovine tuberculosis. This money is being furnished by the taxpayers and because they really believe the work is worth while and is yielding results which more than compensate for the enormous cost. The suppression of foot-and-mouth disease has likewise cost many millions of dollars, yet the money has been wisely spent and its value returned many fold to the animal industry of the United States. It costs money and sometimes large sums properly to control an infectious disease.

One of the reasons for the liberal support given to the eradication of bovine tuberculosis is its definite relation to human health. Any disease transmissible from animals to man receives a great deal of attention. For many years it was believed that bovine infectious abortion had no relation to the health of man. Recently researches have shown that bovine infectious abortion may have connection with human welfare. Alice C. Evans, of the Public Health Laboratory, was the first to show that *Bact. abortus* (Bang) was very closely related, if not identical with, *Mic. melitensis*, the cause of Malta fever. Malta or undulant fever is primarily a disease of goats which is transmissible to man, and a number of cases has been described in this country, especially by Lake, of the Public Health Service. You will probably remember Dr. W. A. Stephenson, late State Veterinarian of Utah, who died in 1923 of Malta fever contracted from goats. The work of Evans on the close relationship of the germ causing abortion of cattle, and that of Malta fever, has been amply confirmed by Myer and his associates in this country; by Burnet in Algiers; Khaled in Egypt; Orpen and Bevan in Rhodesia; Dargein and Plazy in France; and Rabagliati and Vaccaro in Italy. The carefully-studied case reported by Keefer, of John Hopkins Hospital, shows conclusively that an organism which cannot be differentiated from that which causes abortion in cattle, may produce disease of man. Thirty-five cases of human disease produced by the abortus variety of the melitensis organism have been reported from South Africa. In an unpublished report, Carpenter, of Cornell, describes a case of disease in man caused by an organism which cannot be distinguished from *Brucella melitensis*. Carpenter produced abortion in a pregnant cow with the culture obtained from the human subject. He also obtained the abortion germ by bacteriological examination including animal inoculation from nearly every sample of milk from the dairy supplying it to this individual. Evans reports a case of human disease due to the abortus type of Virginia. This individual was in the habit of drinking raw cow's milk, but the source of the infection was not definitely established. There have been sent to Evans at the Public Health Laboratory at Washington, for identification, strains of the abortus type isolated from human cases of Malta fever, from South Dakota, Connecticut, California and Utah. The histories of these cases exclude infection from goats. It is quite apparent that there is some relation between bovine infectious abortion and human health. As was pointed out in an editorial in the *Journal of the American Medical Association*, "the fact appears to be established that the agent of contagious abortion may infect man."

The efficient control of an infectious disease depends to a large extent upon a reliable method of diagnosis. This is particularly true in respect to diseases in which the "carrier" problem takes an important place.

The diagnostic use of tuberculin is the keystone in the arch of tuberculosis control. McFadyean and Stockman in England, and Holth and Wall in Denmark in 1908 and '09 were the first to point out the value of the agglutination and complement fixation tests in the diagnosis of bovine infectious abortion. Since this date many investigators have published reports of their studies of the application of these tests. During the past year, members of your committee have been studying the sera reactions for bovine infectious abortion. We have demonstrated several very important technical features in connection with both tests. The degree of concentration of the test fluid in the agglutination method is very important. The individual equation in reading the test must, as always, be considered. We have determined that under routine conditions the agglutination test is superior to the complement fixation, because it is less complicated and is not affected by so many factors. Under certain conditions as a check test on doubtful or suspicious animals, and in the incubative stages of the diseases, the complement fixation test is particularly valuable.

We desire to emphasise that the sera reactions for bovine infectious abortion are reliable. True, they do have certain weaknesses, but that can be said about any biological test. The greater extent to which they are being used by practitioners, as pointed out by your committee last year, is an indication of their worth, and also the breeders appreciate their value and are requesting that their herds be tested.

We desire, in conclusion, to recommend two things: (1) That this association take official cognizance of bovine infectious abortion as an infectious disease of animals, and (2) that the live stock sanitary authorities of each State study the situation in respect to this disease in their particular commonwealths, and initiate such control measures as they consider advisable, and further that such authorities be prepared to report to this association next year the progress which has been made.

Old Ellesmerians' Memorial Chapel.

The ceremony of laying the foundation stone of the Memorial Chapel at Ellesmere College, Ellesmere, Shropshire, took place on Wednesday afternoon of last week amongst a large assembly of Church Dignitaries, the Governors and Fellows of the College, Sir Offley Wakeman, Bart., the Custos of the College, the Rev. T. H. Hedworth, M.A., the retiring Headmaster, D. R. Evans, Secretary, as well as past and present boys, their parents and friends.

The Chapel, which is designed on broad lines to accord with the present extensive School Buildings, has been designed by Sir Aston Webb. The cost is being defrayed by contributions from various sources, but principally from the Old Boys of Ellesmere College, to whom it is designed as a memorial to commemorate those who fell in the war.

After the procession had been formed in the large School the assembly moved from the Temporary Chapel to the School Ante Hall where the first part of the office was said by the Provost of the school, Prebendary Talbot. The procession then proceeded to the site of the Foundation Stone, and the Custos of the College, Sir Offley Wakeman, then declared the same "well and truly laid."

A return was then made to the Ante Hall and the Provost of Lancing (Bishop Southwell) gave an inspiring address and made an eloquent appeal to the boys to make themselves worthy citizens of the great British Empire. A collection for the Building Fund of the Chapel closed the proceedings.

DIVISIONAL REPORTS.

South Eastern Division.

Discussion on The Milk and Dairies Order, 1926.

The Autumn Meeting of this Division was held at the Royal Star Hotel, Maidstone, on Wednesday, September 22nd. The President, Mr. J. B. Dier, occupied the Chair, and there were also present Messrs. J. G. Cattell, C. Crowhurst, E. R. Ebbetts, F. C. Gillard, H. S. Head, J. W. M. Hinton, F. F. Horton, F. Marks, Charles Roberts, Charles Rose, H. Taylor, G. Wacher, and Hugh P. Hogben (Hon. Secretary). *Visitor*, Mr. E. B. Barrett.

The *Minutes* of the previous meeting of the Division, which had been published in the *Record*, were taken as read and were signed as correct.

Correspondence.—(1) Apologies for absence were announced from Professor J. B. Buxton, Major L. L. Dixson, Messrs. W. D. Halfhead, T. F. Hogben, E. Morgan, L. P. Pugh, and A. Whicher.

(2) Replies to letters of condolence in respect of the death of the late Sir Stewart Stockman from Lady Stockman and from the Ministry of Agriculture and Fisheries.

New Members.—Mr. W. D. Halfhead (Hailsham), and Captain W. S. E. Morton (Tunbridge Wells), were unanimously elected as members of the Division.

Nomination.—Mr. E. P. Barrett, of Margate, was nominated as a member.

The Milk and Dairies Order, 1926.

The President opened the discussion on this subject in the following terms:—

When our Secretary asked me if I would consent to open the discussion on the new Milk and Dairies Order, I rashly promised to do so. I say rashly, because at that time I had not read the Order, and since doing so I must admit that I do not thoroughly understand it. I hope, therefore, that the discussion to-day will enlighten me on several points.

In consequence of this limitation I only intend to deal with Part iv. of the Order, which relates to the health and inspection of cattle. The remainder of the Order will be enforced by the sanitary authority.

Under Part iv. it is the duty of the County Councils and County Borough Councils to cause such inspection of cattle to be made as may be necessary and proper for the purposes of the Order. Therefore, they will have the appointing of the veterinary inspectors. This will probably be done by the Public Health Committee of the different Councils. It has been suggested that the present inspectors under the Contagious Diseases of Animals Acts be appointed. With this I quite agree, otherwise we shall have a duplication of veterinary officers, because the inspector under the Milk and Dairies Order would otherwise have to report all cases of suspected tuberculosis of the udder and enlarged glands, for the inspector under the C.D.A.A. to deal with. The Order does not state how often

the inspection is to be made. I understand that some authorities suggest this should be done every three months.

Where a veterinary inspector gives notice to a cowkeeper of his intention to make an inspection of cattle for the purposes of this Order, the cowkeeper shall not allow any cow to be removed from the registered premises without the consent of the inspector, until the inspection has been made, or a period of forty-eight hours has elapsed from receipt of the notice. This will allow us two days in which to make the inspection should we get delayed with other cases. For myself, I prefer to make the inspection during the time the cows are being milked. A veterinary surgeon may require any cow to be milked in his presence, may take samples of milk, and require the milk from any particular teat to be kept separate. The Order does not state whether the inspector is to examine the samples himself or send them away to some laboratory.

The Acts forbid the sale for human consumption, or the sale for use in the manufacture of products for human consumption, of the milk from any cow which is giving tuberculous milk or which is suffering from any of the following diseases: emaciation due to tuberculosis, tuberculosis of the udder, acute inflammation of the udder, acute mastitis, actinomycosis of the udder, anthrax, foot-and-mouth disease, suppuration of the udder, any comatose condition, any septic condition of the uterus (such as retained placenta, etc.), or any infection of the udder or teats which is likely to convey disease.

The above diseases of a tuberculous nature should be dealt with under the Tuberculosis Order.

Acute inflammation of the udder may affect all four quarters of the udder or only one. If only one is affected, the owner of the animal will often ask if he can use the milk from the other three quarters. I am strongly of opinion it should not be used.

Acute Mastitis is similar to acute inflammation.

Actinomycosis of the udder is, in my experience, seldom met with.

Anthrax. In cows with a very abnormal temperature the milk should not be used.

Foot-and-Mouth Disease. Our duty is to report at once and stop the milk being used.

Suppuration of the Udder. The milk from cows with suppurating udders should not be used under any condition, or milked into any vessel into which healthy cows are milked. In my opinion, the milk from any abnormal quarter should never be milked on to the floor of the cowshed, as you so frequently see being done, but should be collected in some suitable vessel and put down the drain or some other proper place where healthy cows cannot come in contact with it.

In my experience I am certain some cows become infected from dirty floors and bedding, especially after milking. When the teats are moist and the ducts relaxed in easy milking cows, conditions are favourable for microbes to enter and set up infection.

Any Comatose Condition, such as milk fever or narcotic poisoning. In milk fever the milk should not be used until the udder has regained its normal condition. In narcotic or other poisonings this will depend on the length of time before recovery takes place.

Septic Conditions of the Uterus (retained placenta, etc.). One can hardly imagine anything more likely to contaminate the udder and milk than a putrid placenta, often hanging down to the cow's feet, and the discharge running down the cow's legs, and on the udder.

The placenta should be removed and the legs and udder washed before the milk from such animals should be used for human consumption. The same procedure should be carried out in cases of eversion of the uterus, etc.

Infection of Udder and Teats, which is likely to convey disease. This is an important matter and requires great care and consideration from the veterinary inspector.

The milk from cows affected with acute cow-pox should not be used, especially in the vesicular stage. But after the acute stage has passed, there is not much danger. These cows should be separated if possible and always milked last.

I understand that it is the veterinary inspector's duty to serve a notice on the owner to stop the milk from any particular cow which he considers unfit, from being used for human consumption. The notice can only remain in force five days, when it ceases to operate. But the inspector can issue further notices with a like limitation of time. Does this mean that the inspector is to visit every five days where such notices are served?

The Owner receiving such notice has the right to appear before the local authority and apply for the withdrawal of the same. Here it is obviously a matter of importance how often the authority meet.

In Cases of injury to one quarter, such as a blow causing slight hæmorrhage, or disease confined strictly to one quarter of the udder and in no way affecting the other three quarters, such as indurated or blind quarter often found in freshly-calved heifers, I should not object to the milk being used from the healthy quarters.

As to the question of fees, I am not in a position, at present, to suggest what we ought to receive. So far as East Sussex is concerned, we have received no instructions as to how the County Council wish us to carry out the inspections.

I will not detain you longer with my views, but hope this will lead to an interesting discussion, as I have never attended one of our Association meetings without having been able to learn something to our mutual advantage.

Mr. TAYLOR received an affirmative answer from the President when he enquired if the County Council were obliged to adopt those regulations. It was not a permissive Order. The President quoted Section 10 of the Milk and Dairies (Consolidation) Act, 1915, as follows: "(1) A local authority may, and when required by the Local Government Board shall, appoint or combine with another local authority in appointing

one or more veterinary inspectors, or employ for the purposes of this Act and the Milk and Dairies Orders any veterinary inspector appointed under the Diseases of Animals Act, 1894, and any local authority may, and when required by the Local Government Board shall, provide or arrange for the provision of such facilities for bacteriological or other examinations of milk as may be approved by the Board. (2) Any Order requiring a combination of local authorities for the purpose of this section may provide for all matters incidental to such combination and, in particular, how the expenses incurred are to be appropriated."

A MEMBER read a letter which he had received from the Kent County Council informing him that the County Council proposed to appoint its veterinary inspectors to assist the chief medical officer in making such inspections of cattle as might be necessary and asking him to inform the authority if he would be willing to act in that capacity.

The PRESIDENT said that under the Section a cow-keeper was defined as a person who kept one or more cows that supplied milk, and all these people would, therefore, have to be registered. That was not the case under the Scottish Order. In the case of a cow-shed registered previous to October of this year they could not call for any big alteration in it, beyond having it kept clean, and as to making the floors impervious, it would be 1928 before they could serve a notice for that to be done. However, that was not for the attention of the veterinary officer, but for the sanitary officer. In regard to their duties under the Order, they should be told exactly what these were. The question arose whether or not they gave you a copy of the register of cow-keepers and asked you to visit them either in the presence of the sanitary inspector or by yourself.

The HON. SECRETARY: I may say that this matter has been discussed by the Veterinary Inspectors' Committee in London and the general impression seems to be that there will be nothing in the shape of quarterly inspections. But we certainly are likely to be called in to make inspections in regard to samples of tuberculous milk. Where tuberculous milk has been discovered an endeavour is made to trace the source of the infection and if a certain herd can be incriminated the veterinary inspector is asked to go and make an examination and try to find what animals are giving this milk. I have had one case, or, as I should perhaps rather term it, one experience. An animal was sent away from a market apparently in good health. She was a fattened beast and when killed was found to be rotten with tuberculosis. The local authority addressed themselves to the County Council and asked that an investigation be made, as they thought there might be other tuberculous animals. I cannot see what ground the local authority had. However, the complaint was made and I had to go to this place with the assistant medical officer and we examined cows. I found one slightly suspicious animal and a biological test of the milk was made, but the result was negative and the animal was cleared. I do not know when a case of that kind is sufficiently strong for an inspection to be made. This animal (the first one) was sold as a butcher's beast and was in good condition. I do not think there will be many cases of this kind.

Mr. EBBETTS stated that the Rochester Corporation had informed him that, under the new Order, he would have to do the work for the County Council instead of carrying out his quarterly examinations for them, as heretofore.

Mr. H. TAYLOR: The Medical Officer of Health for Brighton has been testing samples of milk for the last few months and has frequently found tubercle bacilli in them. Upon the receipt of the report that *B. tuberculosis* has been found, I test the cows. We have done numbers of them and the difficulty is to find when you can impose restrictions upon a particular cow. You may have an enlargement the size of an orange—is that tuberculous or not? The biological test takes a long time and it is hardly fair to destroy all the milk for the six weeks which must elapse before the result of the test is available.

A MEMBER: If we do not inspect these animals, how are we going to find out what disease exists amongst them?

The PRESIDENT: I think it is really intended that the Grade A untested should come under the Order, but instead of the owner having to pay, it means now that the County Council pay and they are expecting that for the Grade A untested you should make a careful inspection of the udder. You have to state what cows are affected with disease of the udder, the nature of the disease and mention the name, marks, or other particulars of the animal. You leave a copy of that with the owner and another copy you send down (in my case) to Lewes; they then write you and give you notice that the milk must not be used until such time as the animal is cleared, if the owner decides to call in a veterinary surgeon, or until the next quarterly inspection. It is an entirely fresh Order, but it is working on that principle.

Mr. C. ROBERTS: I think the President said something in his opening remarks about inspection every three months. That is not in the 1926 Order.

The PRESIDENT: It has been suggested.

Mr. TAYLOR: A periodical inspection becomes a cause of great expense.

The HON. SECRETARY: The only way to get at it, in my opinion, is for us veterinary inspectors of Kent to ascertain the precise nature of the work we are required to do. I do not think the quarterly inspection will be introduced yet.

Mr. ROBERTS: Who suggested the three months?

The PRESIDENT: It has been suggested by several rural councils and it was brought up at one meeting of the County Council of East Sussex.

Mr. ROBERTS: First of all, I would like to thank Mr. Dier for bringing this matter before us and for reading us the paper. The matter seems to have two main aspects—the clinical and this very important County Council side of it. If the three months' arrangement is carried out, one asks the question, who is to pay? But against that, in this circular

letter from the County Council and in the 1926 Order the words are "and making such inspections of cattle as may be necessary and proper for the purpose of dealing with the cases arising." It is very nebulous, is it not? Who is to tell what inspections are necessary and proper to be dealt with by us under this Order? A point touched upon by Mr. Dier is the importance of making the examination immediately after milking. There is no doubt that when the udders are full some of the deeper-seated lesions are not easily found and certainly not easily examined. There is also the point of what has to be done with samples after we have taken them. I suppose they will go to the Medical Officer of Health; if that is not done and we have to examine a number of samples it means a good deal of time.

Where the cleansing is left hanging for days, there is a great liability to mastitis of one or more quarters; most commonly, when only one quarter is thus affected, it is a posterior one, because that is more liable to contamination from the discharges that descend from the vulva. Concerning the use of the milk of comatose animals, one has seen the milk of milk-fevered cows given to calves and pigs with impunity, but to what extent it is a danger to human beings I do not know. I do not think it is very dangerous. Cow-pox is a disease that can be contracted by milkers and veterinary surgeons handling animals so affected.

We now come to the second aspect of the question—this letter from the County Council. They ask if the receiver of the letter is willing to be appointed, but it is difficult to answer that question until we have heard more exactly what has to be done. The County Council has decided that a fee (stated) shall be paid to the veterinary inspector for each such inspection. We do not know whether that is for the inspection of one cow only or for thirty or forty cows. You cannot reply and accept the position without knowing more particularly about it.

The PRESIDENT: I would like to say a few words about sending milk samples for biological test. One case I had was in a herd where the cows had all been tested and the rejected ones put on one farm. I had occasionally to go and pick out one with a chronic cough, but that meant that I had to look at the whole herd. One with an enlarged throat I killed without a test. Four had hard enlargements of the udder. The milk from them had been stopped only the day I visited, and it had been sent away with the other milk. I sent the four samples of milk away to the laboratory at Hailsham. I had a letter in a week to say that in five days one sample of milk had killed a guinea-pig with septicæmia and pyæmia. In a few days more I had another letter to say that another lot of guinea-pigs had died from abscesses of the liver. Out of the four samples only one lot of guinea-pigs tested with them lived for the six weeks, but not one was returned as tuberculous. Consequently, it is clear that in some of these cases from which you send milk samples you may not get any further, after waiting six weeks, than you were when you started.

Mr. TAYLOR: Would it not be as well to get the feeling of the meeting as to whether or not a quarterly inspection should be advocated?

The HON. SECRETARY: The question of the fee offered to us by the County Council has been raised and, with the consent of the President, we will discuss it. I think, however, we should go into Committee to discuss the letter from the County Council, with particular reference to the fee offered.

Upon the resumption of the open meeting, it was announced that it was left to the Hon. Secretary and Mr. C. Crowhurst to approach the Clerk to the County Council and the Medical Officer of Health with a view to ascertaining the full extent of the duties involved under the Order and to discussing the question of fees, the matter to be reported back to the veterinary inspectors.

THE POSITION OF PART-TIME VETERINARY INSPECTORS IN SCOTLAND.

This matter was raised by the HON. SECRETARY, who said that the part-time veterinary inspectors in Scotland had offered to work under the Dairies Order, but were told that they must not practise in the district in which they were appointed. All the other part-time officials were allowed to practise in the districts of their appointments and the veterinary inspectors resented very much what they regarded as an invidious and insulting distinction. They approached the "National," who supported them, but the latter received a letter from the Scottish Board of Health saying that under the Act they were not supposed to support part-time men other than in exceptional cases, and the "National," dropped it.

He desired to propose the following resolution:—

"That this Division of the 'National,' in the general interest of the profession, requests the National Veterinary Medical Association to give further consideration to the humiliating terms of service offered to part-time Scottish veterinary inspectors under the Milk and Dairies Act (Scotland), 1914, with a view to the removal of the ban of inability to practice in the district of appointment.

"In consideration of the fact that the ban is only applied to the veterinary profession, it is of opinion that a strong protest should be made to the Scottish Board of Health. Further, as it is of opinion that the position is due to want of consultation of the veterinary profession, it suggests that a general recommendation be sent by the 'National' to all Divisions to form Veterinary Inspector Sections for the purposes of consultation, discussion and advising in all matters pertaining to their province."

Some discussion ensued, following which it was agreed to defer consideration of the matter to the next meeting.

Post-mortem Exhibit.—Mr. F. MARKS exhibited a hæmatoma from an eight year old dog. It was attached to the spleen and the noteworthy feature was its extraordinary size, the tumour weighing 5 lbs. The animal, which was a ferocious beast, exhibited no sign of pain until a week ago, the Sunday previous to

the meeting, when, at 4 p.m. it vomited. At 6-30 p.m. it started staggering about and it died at 7-30. When called to examine the dog, the speaker thought it was of a peculiar shape and on palpation the tumour was plainly to be felt through the abdominal wall, for it was quite hard to the touch.

Next Meeting.—It was decided to hold the January meeting (Annual Meeting and Dinner) at Tonbridge.

The proceedings terminated with a hearty vote of thanks to the President for his conduct in the Chair.

H. P. HOGBEN,
Hon. Secretary.

North Wales Division.*

A meeting af this Division was held at the Owen Glyndwr Hotel, Corwen, on July 16, when the President, Mr. J. E. Mills, Caersws, was in the Chair.

There were also present Messrs. Broome (Ministry of Agriculture), Cartwright (Dyserth), Edwards (Mold), Hughes (Caerwys), Hughes (Mold), Hughes (Liverpool University), Jones (Towyn), Jones, W. O. (Llanrwst), Jones (Llansaintffraid), Montgomerie (Bangor), Roberts (Pwllheli), Salusbury (Corwen), Savage (Bangor), Dr. Share-Jones (Liverpool), Wynn-Lloyd (Carnarvon), and Wynne (Denbigh).

Apologies for absence were received from Messrs. Booth, Cane, Fewings, Mathews and Smyth.

Next Meeting.—It was arranged that the next meeting be held at Bangor on Friday, October 15, unless a joint meeting with the North Wales members of the British Medical Association is arranged to take place in the Autumn as has been the case for the past two years—in that event the Bangor meeting to take place early in 1927. Mr. Montgomerie was asked to provide a subject for discussion.

Dr. Share-Jones agreed to prepare a paper for the joint meeting on a subject of interest to both sections.

New Members.—Messrs. G. D. Broome, L. L. Jones, and Dr. Share-Jones were unanimously elected.

The PRESIDENT delivered a short address which was full of interest, and he also referred to the great loss the profession had suffered through the death of Sir Stewart Stockman.

Mr. H. M. SALUSBURY, M.R.C.V.S., D.V.H., read a paper on "A Few Surgical Cases in Ruminants." This included amputation of limbs and uteri. The author was of opinion that practitioners should more frequently attempt such operations.

The discussion was opened by Mr. RICHARD JONES and well sustained.

Mr. RICHARD JONES brought forward the subject of "Pervious Urachus and its Sequelæ." The discussion proved that various lines of treatment are adopted for the original trouble.

Mr. CARTWRIGHT called the attention of the meeting to the risk veterinary surgeons encounter of becoming infected with bovine tuberculosis and he instanced a case of "Post-Pharyngeal Abscess" in a bullock in which the operator, owing to the animal being very rough, received some nasty abrasions of the hand and arm. After the lapse of several months, this veterinarian developed an eruption on the skin of the forearm which was found to be increasing in size till it became an angry, granular, scaly lesion with raised surfaces and edges, measuring 20 by 12 m.m. On medical advice a skin specialist was consulted. The latter pronounced it tuberculosis; he regarded it as lupus of bovine origin. The specialist, without knowing any of the facts, regarded the age of the lesion as probably over two years, and this proved to be very near the time when the practitioner's arm had been injured by the teeth while opening the abscess. Treatment was successful and only a scar remains.

It is of interest, and very significant, that two other veterinary surgeons present in this small gathering had suffered from local lesions of tuberculosis of bovine origin.

Mr. BROOME, of the Ministry of Agriculture, briefly addressed the meeting on some points in connection with the Tuberculosis Order.

Votes of thanks to the President for his interesting address and to Messrs. Salusbury, Richard Jones, and Cartwright for their contributions, closed a very successful meeting.

J. H. WYNNE,
Hon. Secretary.

* Received on September 28th.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Oct. 12th.	Meeting of the Derbyshire Division, at Derby.
Oct. 14th.	Annual General Meeting of the Central Division, at 10 Red Lion Square, W.C.
	Meeting of the Lincolnshire and District Division, at Lincoln.
Oct. 15th.	Meeting of the Mid-West and South Wales Division, at Cardiff.
Oct. 24th.	Meeting of the North Wales Division, at Chester.
Nov. 3rd.	Annual Meeting of the Scottish Metropolitan Division, at Edinburgh.

SUDDEN DEATH OF MAJOR F. W. PAWLETT, OF YORK.

We regret to record the sudden death, which occurred in a nursing home in York, of Major Frederick William Pawlett, M.R.C.V.S., R.A.V.C., T.A., of 35 Bootham, York, who was a familiar figure in York and district, and was once a regular rider to hounds.

Born 52 years ago at Theddingworth, in Leicestershire, Major Pawlett, who was a well-known veterinary surgeon, was educated at Oakham and at Rich's Royal Veterinary College, Edinburgh. Through the South African War he served as a civil veterinary surgeon. In 1905 he was gazetted to the Yorkshire Hussars (Imperial Yeomanry) as a veterinary lieutenant, and later he was transferred to the Territorial Army Veterinary Corps. In 1924 he was appointed D.A.D.V.S. to the 49th West Riding Division. Major Pawlett served in France during the war. He took part in the retreat from Mons, and was mentioned in despatches.

At the interment, which took place at York Cemetery, on September 28th, the following officers were in attendance: Colonel O. H. Delano-Osborne, C.M.G. (representing Lieut.-Gen. Sir Charles H. Harington, G.O.C.-in-Chief Northern Command), Major-Gen. N. J. G. Cameron, C.B., C.M.G. (G.O.C. 49th West Riding Division), Bt.-Lieut.-Col. A. F. G. Pery-Knox-Gore, D.S.O. (D.A.A. and P.M.G. West Riding Division), Lieut.-Col. J. F. Cadell, Lieut.-Col. H. H. Wilberforce, D.S.O., T.D., Col. W. L. C. Kirby, D.S.O., O.B.E., Lieut.-Col. H. Harington, Capt. T. Riley, M.C., Capt. T. Harper, T.D., Lieut.-Col. G. K. Sullivan, M.C., O.B.E., (representing chairman and members of the West Riding Territorial Army Association), Capt. G. W. B. Tarlton, M.C., Capt. W. Mildren, M.B.E., Capt. R. Hayes (West Riding Division, R.A.V.C.), Col. W. A. White, Capt. C. Harland, and Capt. R. T. Pearson.

The general mourners included Mr. J. Clarkson, M.R.C.V.S., Leeds (representing the Royal College of Veterinary Surgeons), Mr. G. E. Bowman, M.R.C.V.S. (Leeds), Mr. A. McCarmick, M.R.C.V.S. (Leeds), Mr. A. Ellison, M.R.C.V.S., Mr. H. W. Brekke, M.R.C.V.S. (Malton), and Lieut.-Col. H. G. Bowes, F.R.C.V.S. (Leeds).

* * * * *

SEELY, Charles Montague, 51 Morland Road, Croydon. Graduated Glasgow, 30th May, 1891. Died, 27th September, 1926.

An amendment to the Diseases of Animals Acts is published in the *Gazette* at the instance of the Minister of Agriculture.

This amendment provides that, in the case of any premises declared to be an infected place, no person shall, until such premises have been disinfected to the satisfaction of the Minister, enter or leave them unless authorised by a written permit obtained from an Officer of the Ministry.

PERSONAL.

Will: Sir Stewart Stockman, of Phœnix Lodge Mansions, Brook Green, W., and of Woodside Place, Glasgow, Chief Veterinary Officer and Director of Veterinary Research to the Board of Agriculture and Fisheries, who died on June 2nd, aged 57, left personal estate in Great Britain valued for probate at £6,896.

A further outbreak of foot-and-mouth disease occurred in Wellingborough neighbourhood on Monday at a pig farm, where there were seventy animals. This is the fourth outbreak in the district.

As one of the results of the English outbreak of foot-and-mouth disease, the export slaughterhouse at the Hook of Holland has been closed down. The meat train running from Leeuwarden to Flushing five times a week has also been cancelled by the railway authorities.

National Veterinary Medical Association of Great Britain and Ireland.

EDITORIAL OFFICE: 10 Gray's Inn Square, London W.C.1.

All communications relative to the literary side of the Veterinary Record must be addressed to the Assistant Editor, "Veterinary Record," 10 Gray's Inn Square, W.C.1

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

"Milk from the Cow's Point of View."

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Mr. Wynn Lloyd, in his address at Carnarvon, *re* the above, rather digressed from his text, and confined the theme of his lays to clean milk production, leaving us to guess what the cow thought about her vital fluid secretion.

If the cow could speak and were interviewed on the subject she would probably say that the collection, distribution and ultimate destination of milk were no concern of hers: that she was only intended by nature to give sufficient to supply her calf or calves until such a time as they could fend for themselves—nothing more, nothing less. And, if she were a sensible and deep-thinking cow, she would dilate forcibly on the ultimate effects this excessive production of milk will have on the bovine race.

Agricultural experts, in their advocacy of milk recording, tell us to go and produce more milk and still more milk. They say it is quite simple. Give your cows so many pounds of food, then it follows—as the night follows the day—out come so many pounds of milk with mathematical precision. The cow's point of view doesn't matter.

Milk recording is, up to a point, essential commercially for the purpose of weeding out poor milking and profitless cows, but when it is pushed to such a pitch as to convert a self-respecting cow into a mere milk-producing machine, *nature begins to rebel.* Excessive milking properties are to be deprecated; the animal economy cannot stand up to them; consequently, such diseases as tuberculosis, abortion, sterility, Johnë's disease, mammitis, milk fever, as well as digestive disorders, are alarmingly on the increase.

Sooner or later, the cow's point of view, as interpreted by the profession, is bound to clash with that of commerce.

Yours, etc., J. FORBES.

Truro,
4th October, 1926.

East Coast Fever Experimentation.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I should be glad if you would publish the following details of the experiments on East Coast Fever mentioned in my paper on this subject published in your paper of the 25th September, 1926. The details are taken from *The East African Standard*, weekly edition, dated 17th July, 1926, "Importance of Research in Veterinary Work," p. 33, column 2, paragraph 9.

"Observations were made on the nature of the immunity conferred by natural infection in inoculated cattle and non-inoculated cattle. In the former, re-infection to natural infection occurred on re-exposure in 6·9 per cent. approximately of the total number re-exposed, *viz.*, 86. In the case of the latter, re-infection on re-exposure occurred in 10 per cent. of the total re-exposed."—I am, yours faithfully, G. B. PURVIS, F.R.C.V.S.

c/o Standard Bank of S. Africa Ltd.,
10 Clement's Lane,
Lombard Street,
London, E.C.4.
2nd October, 1926.

The Editor acknowledges the receipt of the following:—

Communications from Dr. G. W. Clough, Mr. D. Imrie, Dr. Erich Jacob, Capt. H. Kirk, Major-General Sir John Moore and Capt. J. M. Whyte.